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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,555	11/26/2003	Alan V. Von Arx	81155(7400)	9669

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EXAMINER	
RODRIGUEZ, WILLIAM H	
ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

Office Action Summary	Application No.	Applicant(s)	
	10/724,555	VON ARX ET AL.	
	Examiner	Art Unit	
	William H. Rodriguez	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 9-23 is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by **Yamanaka et al. (U.S. 5,000,004).**

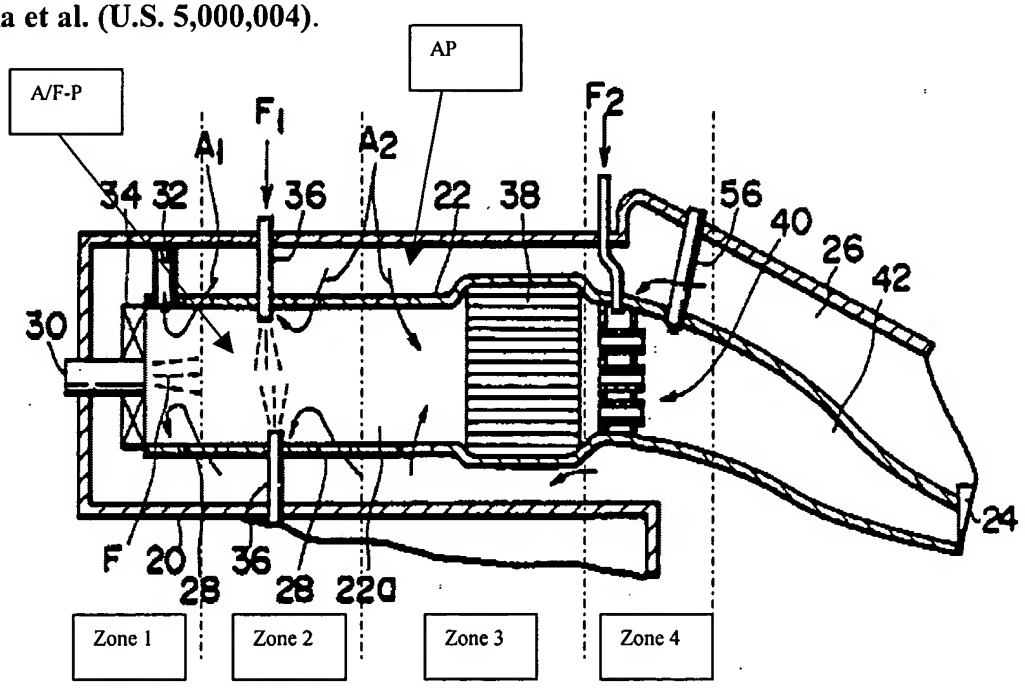


FIG. 6

Combustion is initiated at zone 1, and then propagated throughout said combustor in a cascade reaction through zones 2-4.

With respect to claim 1, **Yamanaka** teaches a heat exchanger for use in a combustor comprising: at least one air passage AP; and at least one premixed fuel/air passage A/F-P sharing a common wall with said at least one air passage; and a means* (flame created by the ignition of the air/fuel mixture) for heating at least one side of said combustor to a temperature wherein combustion is initiated and propagated throughout said combustor in a cascade reaction*. See particularly **Figure 6** of Yamanaka above and the notes below.

* Note that combustion is initiated at zone 1, and then propagated throughout said combustor in a cascade reaction through zone 2, then zone 3 and finally zone 4.

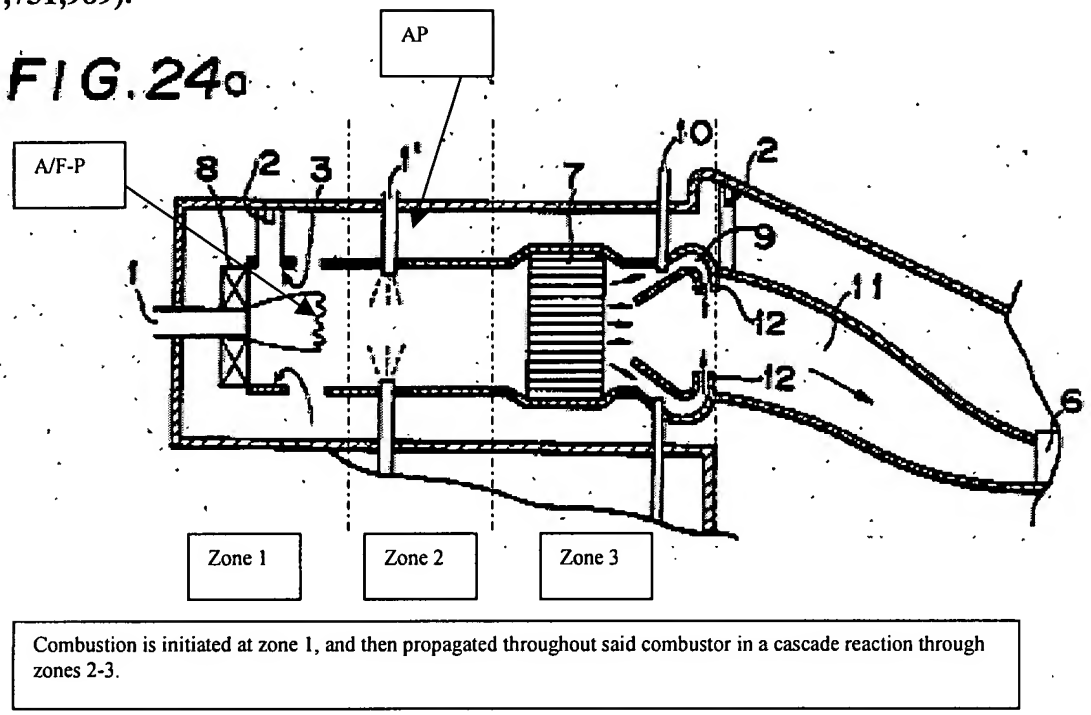
*Note that the means for heating is considered to be the flame created by the ignition of the air/fuel mixture since such flame will inherently heat at least one side of the combustor wall.

With respect to claim 3, **Yamanaka** teaches that the passages are created by tubes. See particularly **Figure 6** of Yamanaka above.

With respect to claim 4, **Yamanaka** teaches that the heat exchanger for the combustor further comprises a catalyst 38. See particularly **Figure 6** of Yamanaka above.

With respect to claim 6, **Yamanaka** teaches that the formation of NOx is reduced. See column 7 lines 4-5 of Yamanaka.

3. Claims 1 and 3-6 are rejected under 35 U.S.C. 102(b) as being anticipated by **Furuya et al. (U.S. 4,731,989).**



With respect to claim 1, **Furuya** teaches a heat exchanger for use in a combustor comprising: at least one air passage AP; and at least one premixed fuel/air passage A/F-P sharing a common wall with said at least one air passage; and a means* (flame created by the ignition of the air/fuel mixture) for heating at least one side of said combustor to a temperature wherein combustion is initiated and propagated throughout said combustor in a cascade reaction*. See particularly **Figure 24** of Furuya above and the notes below.

* Note that combustion is initiated at zone 1, and then propagated throughout said combustor in a cascade reaction through zone 2 and zone 3.

*Note that the means for heating is considered to be the flame created by the ignition of the air/fuel mixture since such flame will inherently heat at least one side of the combustor wall.

With respect to claim 3, **Furuya** teaches that the passages are created by tubes. See particularly **Figure 24** of Furuya above.

With respect to claim 4, **Furuya** teaches that the heat exchanger for the combustor further comprises a catalyst 7. See particularly **Figure 24** of Furuya above.

With respect to claim 5, **Furuya** teaches that the catalyst consists of palladium. See column 5 lines 7-11 of Furuya.

With respect to claim 6, **Furuya** teaches that the formation of NOx is reduced (inherent function of a catalytic combustor).

4. Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by **Bandaru et al. (U.S. 6,775,989).**

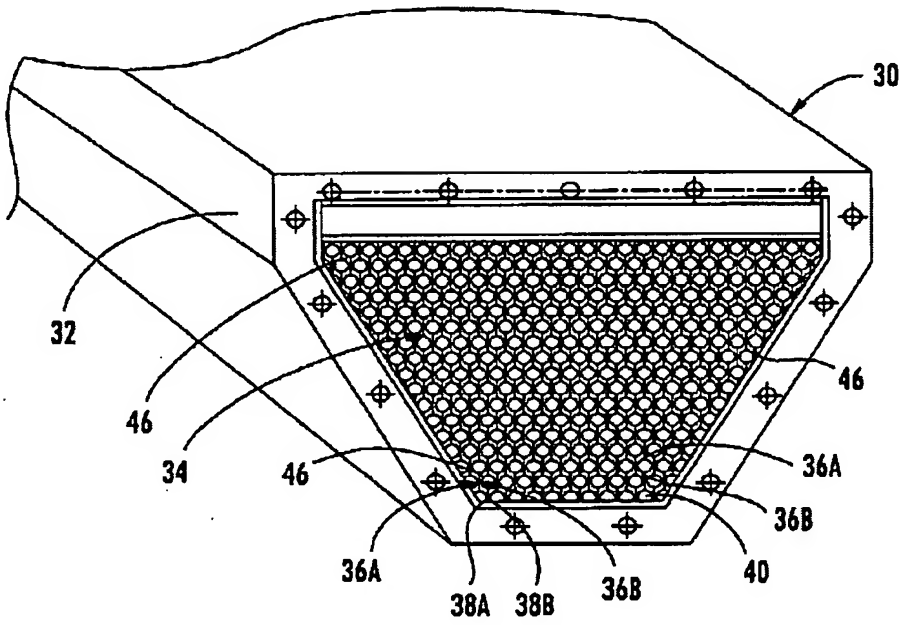


FIG. 2.

With respect to claim 1, **Bandaru** teaches a heat exchanger for use in a combustor comprising: at least one air passage 40; and at least one premixed fuel/air passage 46 sharing a common wall with said at least one air passage; and a means* (the flame created by the ignition of the air/fuel mixture) for heating at least one side of said combustor to a temperature. See particularly **Figure 2** of Bandaru above and the notes below.

Note that the recitation *"wherein combustion is initiated and propagated throughout said combustor in a cascade reaction"* does not add any patentable weight to the claim since it does not serve to distinguish the invention from the prior art due to the lack of structural elements needed to accomplish such desired results.

*Note that the means for heating is considered to be the flame created by the ignition of the air/fuel mixture since such flame will inherently heat at least one side of the combustor wall.

With respect to claim 3, **Bandaru** teaches that the passages are created by tubes. See particularly **Figure 2** of Bandaru above.

With respect to claim 4, **Bandaru** teaches that the heat exchanger for the combustor further comprises a catalyst. See particularly **Figure 2** of Bandaru above.

With respect to claim 6, **Bandaru** teaches that the formation of NOx is reduced (inherent function of a catalytic combustor).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yamanaka et al. (U.S. 5,000,004)**.

With respect to claim 2, **Yamanaka** does not schematically show a temperature measurement device. However, devices (i.e., sensor, probes, etc) for measuring temperatures are well known and commonly used in combustors to monitor the operating temperatures in a combustor in order to prevent any damage to its structure due to abnormal excessive high temperatures. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added a safety device such as a temperature measuring device to Yamanaka's apparatus in order to monitor the operating temperatures in a combustor in order to prevent damage to its structure due to abnormal excessive high temperatures.

With respect to claim 8, **Yamanaka** does not specifically mention the temperature ranges of 900-1000 degrees Fahrenheit. However, it is well known in the art that the claimed temperature ranges are within the typical operating temperatures ranges of a combustor. Therefore, it would have been obvious (if not inherent) that Yamanaka's apparatus will operate within the claimed temperature ranges.

7. Claims 2, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bandaru et al. (U.S. 6,775,989).**

With respect to claim 2, **Bandaru** does not schematically show a temperature measurement device. However, devices (i.e., sensor, probes, etc) for measuring temperatures are

well known and commonly used in combustors to monitor the operating temperatures in a combustor in order to prevent any damage to its structure due to abnormal excessive high temperatures. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added a safety device such as a temperature measuring device to Yamanaka's apparatus in order to monitor the operating temperatures in a combustor in order to prevent damage to its structure due to abnormal excessive high temperatures.

With respect to claim 7, **Bandaru** does not schematically show that the passages are arranged in a honeycomb formation. However, **Bandaru** teaches that the passages can be arranged in any formation without affecting the objective of the invention. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Bandaru's passages such that the passages are arranged in a honeycomb formation because such a modification would have been considered a mere design consideration which fails to add patentable weight to the invention as claimed. See column 4 lines 36-38 of Bandaru.

With respect to claim 8, **Bandaru** does not specifically mention the temperature ranges of 900-1000 degrees Fahrenheit. However, it is well known in the art that the claimed temperature ranges are within the typical operating temperatures ranges of a combustor. Therefore, it would have been obvious (if not inherent) that Yamanaka's apparatus will operate within the claimed temperature ranges.

Allowable Subject Matter

8. Claims 9-29 are allowed.

With respect to claim 9, the following is an examiner's statement of reasons for allowance: the prior art of record neither discloses nor makes obvious the combination set forth in the independent claims, and especially does not show "*a means for heating at least one side of said combustor wherein said means for heating warms a first layer of plates such that the energy of activation for said catalyst is achieved; and a second layer of plates which is heated by said first layer of plates such that a chain reaction ensues wherein the energy of activation is overcome for each successive layer of said plurality of plates*", in combination with the other claim limitations.

With respect to claim 17, the following is an examiner's statement of reasons for allowance: the prior art of record neither discloses nor makes obvious the combination set forth in the independent claims, and especially does not show "*heating the plates which form a side of said first layer of air passages by way of said heated air; and blowing said heated air through said first layer of air passages; and redirecting said heated air into a layer of premixed fuel/air passages; and heating the plates which form a side of said premixed fuel/air passages by way of said heated air; and providing fuel to said premixed fuel/air passages wherein combustion occurs; and directing the resulting thermal energy products into a turbine to produce power while thermal energy from the combustion process heats incoming air in successive layers*", in combination with the other claim limitations.

With respect to claim 23, the following is an examiner's statement of reasons for allowance: the prior art of record neither discloses nor makes obvious the combination set forth in the independent claims, and especially does not show "*a means for heating at least one side of said combustor wherein said means for heating warms a first layer of tubes such that the energy*

of activation for said catalyst is achieved; and a second layer of tubes which is heated by said first layer of tubes such that a chain reaction ensues wherein the energy of activation is overcome for each successive layer of said plurality of tubes", in combination with the other claim limitations.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

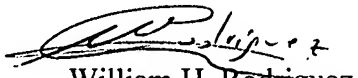
By applying the same reasoning used to reject claims under 1, 3, 4 and 6 by **Yamanaka et al. (U.S. 5,000,004)** above, the reference to **Sanday (U.S. 4,072,007)** anticipates claims 1, 3, 4 and 6 under 35 U.S.C 102 (b). Examiner suggests careful consideration of the Sanday reference when amending the rejected claims. See particularly **Figure 1** of Sanday.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Rodriguez whose telephone number is 571-272-4831. The examiner can normally be reached on Monday-Friday 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



William H. Rodriguez
Examiner
Art Unit 3746